



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/621,129

07/16/2003

Yuriy Gmirya

67,008-070;S-5668

1958

26096

7590

11/17/2005

CARLSON, GASKEY & OLDS, P.C.

400 WEST MAPLE ROAD

SUITE 350

BIRMINGHAM, MI 48009

EXAMINER

LE, DAVID D

ART UNIT

PAPER NUMBER

3681

DATE MAILED: 11/17/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.		Applicant(s)	
	10/621,129		GMIRYA, YURIY	
	Examiner		Art Unit	
	David D. Le		3681	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 August 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-24 and 26-37 is/are pending in the application.
- 4a) Of the above claim(s) 28-37 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-24,26 and 27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>08/24/05</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This is the fourth Office action on the merits of Application No. 10/621,129, filed on 16 July 2003. Claims 1, 3-24, and 26-37 are pending.

Documents

2. The following documents have been received and filed as part of the patent application:
- Information Disclosure Statement, received on 7/16/03
 - Information Disclosure Statement, received on 08/24/05

Election/Restrictions

3. Newly submitted claims 28-37 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: Claims 1, 3-24 and 26-27 are directed to an invention, as shown in Figs. 1-4, which require one module of gears. Newly submitted claims 28-37 are directed to inventions, as shown in Figs. 5, 7, 8, and/or 9, which require two modules of gears.

Since applicant has received actions on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 28-37 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. **Claims 1, 3-24 and 26-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over U. S. Patent No. 5,813,292 to Kish et al. in view of U.S. Patent No. 5,233,886 to Bossler Jr.**

Claims 1, 3-24 and 26-27:

Kish (i.e., Figs. 1-2 and 6; column 1, line 50 – column 13, line 62) discloses a split path transmission system comprising:

- An input shaft (104L or 104R);
- A face gear (being the bevel gear 112L or 112R) driven by the input shaft about a face gear axis of rotation (see Fig. 1);
- A first spur gear (116L Fwd or 116R Fwd) mounted for rotation about a first spur gear axis of rotation (see Fig. 1);
- A second spur gear (116L Aft or 116R Aft) mounted for rotation about a second spur gear axis of rotation (see Fig. 1);
- A pinion (114L or 114R) driven by a pinion shaft mounted to the face gear, the pinion meshed with the first spur gear and the second spur gear, and the pinion mounted for rotation about a pinion axis of rotation (see Fig. 1);

- A first double helical gear (118L Fwd or 118R Fwd);
- A second double helical gear (118L Aft or 118R Aft);
- An output gear (108) meshed with the first and second double helical gears (see Fig. 1);
- A main rotor shaft (102) driven by the output gear;
- Wherein the input shaft is driven by a gas turbine engine (column1, lines 50-55);
- Wherein the face gear defines a gear face perpendicular to the face gear axis of rotation, and the input shaft angled relative to the gear face (see Fig. 1);
- Wherein said pinion gear is mounted to said radially unsupported pinion shaft in a cantilever manner (see Fig. 1);
- Wherein said pinion gear is mounted to a distal end of said radially unsupported pinion shaft (i.e., Fig. 1); and
- Wherein said pinion axis of rotation, said first spur gear axis of rotation, and said second spur gear axis of rotation are located along a common curved line (i.e., Fig. 2).

Kish does not explicitly teach a floating pinion gear driven by a radially unsupported pinion shaft, which provides a flexibility to allow the floating pinion axis of rotation to be displaceable off the common curved line to split a load between the first spur gear and the second spur gear.

Bossler (i.e., Fig. 1; column 3, line 21 – column 4, line 55), on the other hand, teaches a torque dividing gear drive system comprising:

- A floating pinion gear (22) driven by a radially unsupported pinion shaft (20) having a flexible coupling (28) to inherently define a non-linear floating pinion gear displacement envelope; and
- Wherein, inherently, said floating pinion axis of rotation is displaceable off said common curved line to split a load between said first spur gear and second spur gear.

It would have been obvious to one of ordinary skill in the art at the time this invention was made, to recognize the importance and advantage of being able to evenly distributing load between an input floating pinion and two of its meshing spur gears, to modify Kish's gear train branches 106L and 106R such that the pinion gear 114L and 114R are floating pinions, which are driven by a pair of radially unsupported and flexible pinion shafts, in view of Bossler teaching of floating pinion gear, in order to evenly distributing a torque between the floating pinion gear and its meshing first and second spur gears (i.e., Bossler, column 2, lines 45-51).

Response to Arguments

6. Applicant's arguments filed on 24 August 2005 have been fully considered but they are not persuasive.

Applicant argues that there is absolutely no teaching, suggestion, or motivation to modify Kish'292 in view of Bossler because Bossler discloses a pinion gear located between an upper and lower face gears so that the pinion gear and paired face gear combination can turn a corner. By placing the pinion gear of Bossler between two spur gears of Kish, this would not enable the combination to turn a corner, which is in direct contradiction to the teachings of Bossler.

Examiner only uses the teaching of a flexible floating pinion gear disposed in between two driven gears for evenly distributing a driving torque between the two driven gears, as taught by Bossler, column 2, lines 45-51. This particular teaching is used to modify Kish'292 reference for the purpose as stated in paragraph 5 above.

Accordingly, as set forth above, the applied references meet the claimed limitations.

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David D. Le whose telephone number is 571-272-7092. The examiner can normally be reached on Mon-Fri (0700-1530).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles A. Marmor can be reached on 571-272-7095. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


ddl


RODNEY H. BONCK
PRIMARY EXAMINER
ART UNIT 3681